

Application No.: 10/709,399
Examiner: Masih, Karen
Art Unit: 2837

Applicant: Hsien-Lin Chiu.

REMARKS

Present Status of the Application

Claims 1-9 are pending of which claims 1, 3 and 5 has been amended and canceled claim 4 without prejudice or disclaimer to more explicitly describe the present invention. Amendments to claim 1 is fully supported by FIG. 3-6, line 5 of page 5 to line 25 of page 6. Therefore, it is believed that no new matter adds by way of amendment to claim 1 or otherwise to the application.

For at least the following reasons, Applicant respectfully submits that Claims 1-3 and 5-9 are in proper condition for allowance and reconsideration of this application is respectfully requested.

Application No.: 10/709,399
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Claim Rejection under 35 USC 103

The Office Action rejected claims 1-9 under 35 U.S.C. 103(a) as being unpatentable over Prior Art FIG. 9 cited in the application (hereinafter AAPA) in view of Bush et al. (US-6,566,841, hereinafter Bush).

Applicant respectfully disagrees and traverses the above rejections as set forth below.

The present invention is directed to a variable speed brushless **DC** motor. The amended proposed independent claim 1, among other things, recites at least [wherein during the on status of said speed-change switch, electric current flows through said at least two stator windings and during the off status of said speed-change switch, electric current alternately flows through one of said at least two stator windings which connected to the speed-change switch, and wherein said speed-change switch comprises a unidirectional current switch]. The advantage of the above feature is that at least not only the speed of the brushless DC motor can be varied but also the power consumption can also be substantially reduced.

Instead Bush substantially discloses, at FIG. 2, col. 4, lines 17-91, an **AC** PSC motor including a switch (36) assembly including a double pole single throw type switch in which alternate leads are individually connected to separate poles on one side of the switch, a first and second windings (26, 28), a first auxiliary winding 42 and a second auxiliary winding (48). According to Bush, during normal load operation, when maximum efficiency is desired, the switch (36) is placed in the open position. Current passes through first and second main windings (26, 28) and on to the common lead. Current also passes through a first auxiliary capacitor and a first auxiliary winding (42) connected in parallel with the first and second main windings (26, 28). During high

Application No.: 10/709,399
 Examiner: Masih, Karen
 Art Unit: 2837

Applicant: Hsien-Lin Chiu.

load operation, when maximum torque output is needed at a load point, the switch (36) is placed in the closed position. Current, which formerly flowed through the second main winding (28), is now bypassed through the alternate lead, the switch (36), and out through common lead. Current is also passed through a second auxiliary capacitor and a second auxiliary winding (48) in parallel with the first auxiliary capacitor and the first auxiliary winding (42). In other words, Bush substantially teaches that during both normal (open switch position) and high load operations (close switch position), the current flows through TWO DIFFERENT PARALLEL windings (first main winding and first auxiliary winding, and first auxiliary winding and the secondary auxiliary windings, respectively).

First, Applicant would like to point out that AAPA discloses a DC motor with a speed change switch of unidirectional current and whereas Bush substantially discloses an AC motor with a speed change switch of bi-directional current. Therefore, Applicant respectfully submits that speed change switch of AAPA is substantially different from that of Bush, and therefore, the circuits utilizing the speed change switch of unidirectional current are different from that utilizing the speed change switch of bi-directional current, and current supplied for operation of the motor is different. Applicant would like to point out that a person of ordinary skill in the art is also presumed to be one who thinks along the line of conventional wisdom in the art and is not one who undertakes to innovate. Accordingly, because AAPA substantially discloses a DC motor and Bush substantially discloses an AC motor, Bush cannot possibly suggest one skilled in the art, in a manner suggested by the Examiner, to modify AAPA. Any such modification of AAPA would frustrate its intended purpose. As such, AAPA (and Bush) is complete and functional by itself, so there would be no

Application No.: 10/709,399
 Examiner: Masih, Karen
 Art Unit: 2837

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reason to use parts from or add or substitute parts from another reference such as Bush, and certainly not to modify AAPA in the manner suggested only by the Examiner. Any such modification would require hindsight reconstruction, made possible only by the disclosure of the present invention.

Secondly, because Bush substantially teaches that during both normal (open switch position) and high load operations (close switch position), the current flows through TWO DIFFERENT PARALLEL windings (first main winding and first auxiliary winding, and first auxiliary winding and the secondary auxiliary windings, respectively), and therefore Bush AT BEST would suggest one skilled in the art to modify AAPA using THREE different parallel connected windings with a speed-change switch in manner to allow flow of current through TWO DIFFERENT windings during both normal and high-load operations as taught by Bush.

In other word, both AAPA and Bush substantially fail to teach, suggest or disclose a variable speed brushless DC motor comprising at least [wherein during the on status of said speed-change switch, electric current flows through said at least two stator windings and during the off status of said speed-change switch, electric current alternately flows through one of said at least two stator windings which connected to the speed-change switch, and wherein said speed-change switch comprises a unidirectional current switch] as required by the amended proposed independent claim 1. Therefore, Applicant respectfully submits that no combination of AAPA and Bush, in a manner suggested by the Examiner, can possibly meet the amended proposed independent claim 1 in this regard.

Furthermore, Applicant would like to point out that because the present invention uses a speed change switch of unidirectional current (as shown in Figures 3

Application No.: 10/709,399
 Examiner: Masih, Karen
 Art Unit: 2837

Applicant: Hsien-Lin Chiu.

and 4) such as the bipolar junction transistor (BJT) switch or a field effect transistor (FET) switch, and whereas Bush substantially teaches a speed change switch of bi-directional current such as the double-pole single-throw switch or a triple-pole single-throw switch. Accordingly, Bush cannot meet the claimed invention in this regard.

Furthermore, Applicant would like to also point out that when the electric current flows through the stator module to further selectively energize the at least two stator windings of the brushless DC motor of the claimed invention, the duty cycle of the electric current flowing through the stator winding is only about 50%, as shown in Figures 5 and 6, thereby generate comparatively low stator winding operation temperature. However, in case of Bush, the duty cycle of the electric current flowing through the energized stator winding is 100%, and therefore the stator winding operation temperature is substantially higher compared to the claimed invention, thereby adversely affecting the service life of the motor.

Accordingly, Applicant respectfully submits that no combination of AAPA and Bush could possibly achieve every features of the claimed invention in this regard.

Claims 2-3 and 5-9, which directly or indirectly depend from independent claim 1, are also patentable over AAPA and Bush at least because of their dependency from an allowable base claim.

For at least the foregoing reasons, Applicant respectfully submits that claims 1-3 and 5-9 patently define over AAPA and Bush, and therefore should be allowed. Reconsideration and withdrawal of the above rejections is respectfully requested.

Application No.: 10/709,399
Examiner: M-siah, Karen
Art Unit: 2837

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CONCLUSION

For at least the foregoing reasons, it is believed that all the pending claims 1-3 and 5-9 of the present application are in proper condition for allowance. If the Examiner believes that a telephone conference would expedite the examination of the above-identified patent application, the Examiner is invited to call the undersigned.

Respectfully submitted

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